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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,152	04/19/2004	Takuya Tsukagoshi	890050.481	2674

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EXAMINER	
CHANG, AUDREY Y	

ART UNIT	PAPER NUMBER
2872	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/827,152	TSUKAGOSHI, TAKUYA	
	Examiner	Art Unit	
	Audrey Y. Chang	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on January 30, 2006, which has been entered into the file.
- By this amendment, the applicant has amended claims 1-3 and 5 and has newly added claim 6.
- Claims 1-6 remain pending in this application.

Claim Objections

1. Claims 1-5 are objected to because of the following informalities:

(1). **Clams 1 and 3 have been amended** to include the phrase "the holographic recording medium having regions in which optical modulation patterns are recorded" that is really confusing and indefinite. It is really not clear what is this "optical modulation pattern". In the **specification**, applicant states that the "optical modulation patterns" are formed by "projecting the signal beam and the reference beam onto the holographic recording medium" (please see paragraph [0008]), which means the optical modulation patterns are referred to **holographic patterns**. But in claims 1 and 3, the optical modulation patterns are recorded in the servo layer, which then are not holographic pattern formed by the holographic recording process. These contradictory descriptions of the "*optical modulation patterns*" make the scopes of the claims extremely unclear. The claims are not explicitly supported by the specification if the "optical modulation patterns" are the patterns referred to the patterns described in paragraph [0008] of the specification.

(2). The **amended** phrase "the optical modulated patterns are *recorded* by servo projection structures formed on the servo layer" recited in claim 2 is confusing and indefinite since it is not clear how could the optical modulation patterns be "recorded" by the servo projection structures. What are

these structures? Are they simply referred to the servo pits or other recording optics structure? The phrase is better read as "servo protrusions structures formed on the servo layer".

(3). Claims 1-5 include the **amended** phrase "optical modulation patterns are recorded" is confusing and indefinite since it is not clear if this "recorded" is referred to the recording process claimed in the method or not. Of the optical modulation patterns are referred to the servo pits then they are not "recorded" by the holographic recording process and it is better be referred as "formed" to avoid confusion.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1-3 and newly added claim 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent application publication of Horimai (US 2003/0063342 A1) in view of the patent issued to Amble et al (PN. 6,738,322).**

Horimai teaches an apparatus and method for *holographically recording optical information* wherein the apparatus is comprised of a *holographic recording medium* (1, Figure 1) having a *holographic recording layer* (3) and a *servo layer* (4), wherein the serve layer has regions in which *address servo area (6)* having a plurality of embossed servo pits, that serves as the optical modulated pattern for modulating a servo beam (please see paragraph [0136]), are formed. Horimai teaches that the *holographic information* is recorded by projecting a *signal* beam, (such as 51L Figure 7) via a *spatial light modulator* (18) for imparting signal information, and a *reference* beam (such as 51R), and the holographic recording is a recording of the *phase information* of the interfering signal and reference

beams. The retrieve of the recorded holographic information is by projecting only the reference beam to the holographic recording medium to reproduce the holographic information. Horimai further teaches that an *objective lens* (12, Figure 1) is used to focus the signal beam on the holographic recording layer (3). The signal beam and the reference beam are being projected to the holographic recording medium via *projection optics* including *prism blocks* (15 and 19) and the *objective lens*. The optical paths of the signal beam and reference are also implicated set up by the projection optics. Horimai et al also teaches that *a servo beam* can also be projected via *projection optics* such as the prism blocks (15 and 19) and via the objective lens to the specific locations of the address servo areas (6) to retrieve the servo signal. It is implicitly true that since the address servo areas (6) are only located at certain positions of the servo layer the beam path for the servo beam and the beam path for the signal or reference beam are either implicitly different or would have been obvious to one skilled in the art to specifically make it different by moving the objective lens via the *actuator* (13, Figure 1) so that the retrieving of the servo information and the retrieving of the recorded holographic information will not be interfering each other to reduce the possible reading noise, (please see paragraphs [0123] to [0136]).

Amended claims 1 and 3 and newly submitted claim 6 include the feature that the holographic recording beams and the servo beam are being generated by two light sources of different wavelength. Horimai et al does not teach such explicitly. **Amble** et al in the same field of endeavor teaches an optical data storage system with focus and tracking errors wherein the holographic recording beams and the servo beam are generated by two light sources wherein the holographic data are recorded with wavelength of 658 nm and the servo beam is generated by light source (26, Figure 1) with wavelength 780 nm to avoid the cross talk and unwanted interference between the holographic recording and retrieving beams and the servo signal detecting beam.

With regard to claim 2, Horimai et al teaches that the address servo area (6) comprises embossed pits which are physical servo projections or protrusions, (please see Figure 1 and paragraph [0136]).

4. Claims 1-4 and newly added claim 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Curtis (PN. 6,909,529) in view of the patent issued to Amble et al (PN. 6,738,322).

Curtis teaches an *apparatus and method* for *holographic data storage* that is comprised of a *holographic recording medium* (124, Figures 11 and 12) that includes a *photosensitive layer* (124a') serves as the *recording layer* and a *servo layer* (210). The servo layer comprises *servo marks* (210) that serve as the *optical modulated pattern to optically modulate the servo beam.* Curtis teaches that the holographic data storage is achieved by projecting a *signal beam* (142, Figure 4 and 11) via a *spatial light modulator* (128) for data modulating the signal beam and a *reference beam* (140) to the holographic recording medium (124), wherein the *phase* information of the interfering signal and reference beams are recorded in the recording layer. Curtis teaches projection optics including beam splitter (112), block (120) an *objective lens* (122) is used to project the signal beam to the recording medium, (please see Figure 4). Curtis also teaches that a *servo beam* (240) is projected by the projection optics including the beam splitter (245), the dichroic mirror (242) and the objective lens (122, Figure 11) to the *servo layer* to retrieve the servo signal from the servo marks. The *objective lens* (122) is provided to focus the signal beam and also the servo beam at the recording layer and the servo layer respectively. As explicitly shown in Figure 12, the optical path for the servo beam (240) and the optical path for the signal beam (142) are different; for one thing they are focused at different locations and depths. Furthermore, as shown in Figure 11, Curtis teaches that the servo marks are *only* formed at *periphery* of the holographic recording medium this suggests that the projection of the servo beam and the projection of the signal beam should be at different locations (servo beams only at the servo marks). It would then have been obvious, if it is not already the case of Curtis, to one skilled in the art to modify the beam projections direction of the signal beam and the servo beam being different from each other so that the retrieving/recording the

holographic data information and the retrieving of the servo signal will not interfere each other so that unwanted reading noise would not be created. With regard to claim 4, since the servo marks are on the periphery of the recording medium, it would have been obvious to one skilled in the art to make the servo beam projected to the recording medium at different angle than the signal beam so that it can best retrieve the servo signal, (please see columns 4-7, and 14-15).

Amended claims 1 and 3 and newly submitted claim 6 include the feature that the holographic recording beams and the servo beam are being generated by two light sources of different wavelength. Curtis et al does not teach such explicitly. Amble et al in the same field of endeavor teaches an optical data storage system with focus and tracking errors wherein the holographic recording beams and the servo beam are generated by two light sources wherein the holographic data are recorded with wavelength of 658 nm and the servo beam is generated by light source (26, Figure 1) with wavelength 780 nm to avoid the cross talk and unwanted interference between the holographic recording and retrieving beams and the servo signal detecting beam.

This reference has met all the limitations of the claims. Curtis teaches that the servo layer is at opposite side of the recording layer (124a') but it does not teach explicitly that the servo layer is at opposite side of the recording layer *viewed in the direction* of the signal beam. However the arrangement of the order of the layers does not make the function of the servo layer and the recording layer any different it only requires refocusing the beams accordingly which is within the general skill of the a worker in the art. **Amble** et al in the same field of endeavor teaches explicitly that it is known in the art to make the servo layer (34,Figure 1 or 94 Figure 3A) with address servo areas (94, Figure 3A) at the *opposite side* of the recording layer (90, Figure 3A) viewed in the direction of the signal beam. Such modification would have been obvious to one skilled in the art for it is really a matters of design choices to one skilled in the art for making the recording medium satisfies the desire of the individual and satisfies certain requirements of the applications.

With regard to claim 2, Curtis teaches that servo marks are of reflective marks. **Amble** et al teaches that servo layer comprises embossed track or groove pattern serves as the servo projection or protrusion structures, (please see column 7, lines 60-64).

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Curtis (PN. 6,909,529) in view of the patent issued to Amble et al as applied to claim 3 above, and further in view of the patent issued to Matsui (PN. 5,784,353).

The apparatus and method for holographic data storage taught by **Curtis** in combination with the teachings of **Amble et al** as described for claim 3 above have met all the limitations of the claim. Curtis teaches that a projection means including a dichroic mirror and beam splitter is used to project the servo beam to the servo marks, (please see Figure 11). However it does not teach explicitly to include a diffraction grating as a deflecting means for deflecting the servo beam to the desired location. However diffraction grating is known in the art has as light beam deflection means for the essential diffraction property of the incident light. **Matsui** in the same field of endeavor also teaches an apparatus for initializing optical disk including detecting servo signal from the optical disk wherein a servo beam is projected by the projection optics including *diffraction gratings* (103 and 104) as deflecting means and the dichroic mirror (106) for projecting the servo beam to the recording medium. It would have been obvious to one skilled in the art to apply the teachings of Matsui to include diffraction gratings as beam deflection means in the servo beam projection optics of Curtis for the benefit of making the servo beam reaches desired locations and for efficiently retrieving the servo signal.

6. Claims 1-3 and newly added claim 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Amble et al (PN. 6,738,322).

Amble et al teaches an *optical data storage system* and *method* with focus and tracking error correction wherein the system comprises a *holographic recording medium* having a *recording medium* (20, Figures 1 and 2 or 90 in Figure 3A to 3E or 128 in Figures 5A to 5D, 140 in Figures 6A to 6D), for recording a holographic data including phase information of light by projecting a *signal* beam and a *reference* beam (100A and 100B), emitted by a *first* light source of 532 nm wavelength. The holographic recording medium further comprises a *servo layers* (94, Figures 3A to 3E, 120 Figures 4A to 4D, 132 Figures 5A to 5D, 144 Figures 6A to 6D) that is located at opposite side of the recording layer as viewed in a direction of signal beam incidence on the holographic recording pattern. The holographic recording medium within the recording layer has holographic data recorded therein and the servo layer has *servo pattern* or grooves served as the *optical modulator pattern* formed within. Amble et al teaches that the system includes a *second light source* (26, Figures 1 and 2) having wavelength of 780 nm for generating *the servo beam* passing through an objective lens (14) to reach the servo pattern via a servo beam optical path. The signal beam is directed to the recording layer along a signal beam optical path as shown in Figures 3C, 4B, 5B, and 6B.

This reference has met all the limitations of the claims with the exception that it does not teach *explicitly* that the signal beam is directed to regions of the servo layer where the servo pattern is not formed. However since the holographic data is recorded in the recording layer and the servo patterns are formed in the servo layer and the since different light beams are used to record and retrieve holographic data and to detect the servo patterns, it would have been obvious to one skilled in the art to make the signal beam not to projected to the regions of the servo patterns to make the holographic data recorded at different general locations as compared to the servo pattern to avoid interference between the retrieving of holographic data and detection of the servo patterns.

With regard to claim 2, Amble et al teaches that the servo patterns includes embossed track or groove pattern (please see Figure 3A, column 7, lines 60-64), which serves as the projection structures.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. **Claims 1-6 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting** as being unpatentable over claims 1, 3, and 4 of copending **Application No. 10/800,607**. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both disclose a holographic recording and reproducing method and apparatus that is comprised of a holographic recording medium having a recording layer and a servo layer having optical modulated pattern formed wherein the servo layer is placed at opposite side of the recording layer viewed in the direction of the signal beam.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

9. Applicant's arguments with respect to amended claims 1-5 and newly added claim 6 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments are mainly drawn to newly amended features that have been fully addressed in the paragraphs above. Applicant fails to provide arguments for the double patenting rejection to overcome the rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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